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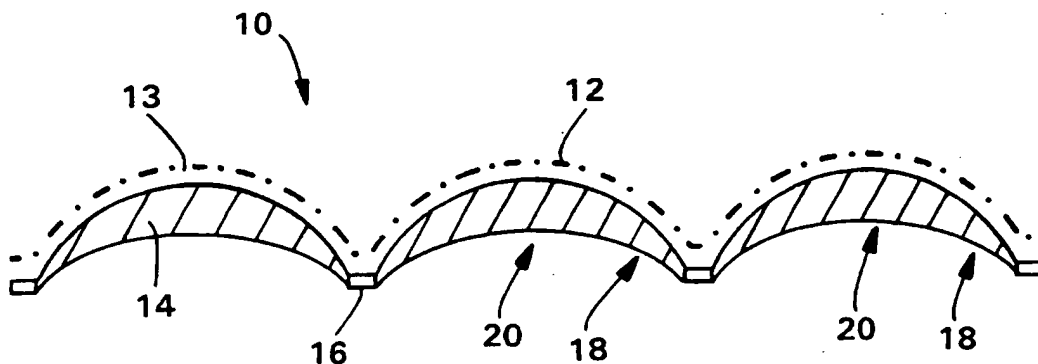
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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : B31F 1/26, A61F 13/15, B29C 53/22		A3	(11) International Publication Number: WO 97/02133 (43) International Publication Date: 23 January 1997 (23.01.97)
(21) International Application Number: PCT/US96/10667 (22) International Filing Date: 21 June 1996 (21.06.96) (30) Priority Data: 08/497,666 30 June 1995 (30.06.95) US (71) Applicant: KIMBERLY-CLARK CORPORATION [US/US]; 401 North Lake Street, Neenah, WI 54956 (US). (72) Inventors: ZELAZOSKI, Gregory, Alan; 2192 East Cherokee Drive, Woodstock, GA 30188 (US). JACKSON, Wanda, Walton; 275 Greenmont Circle, Alpharetta, GA 30201 (US). GEORGER, William, Anthony; 271 Orchard Drive, Canton, GA 30114 (US). SCHMIDT, Richard, John; 285 Spring Ridge Trace, Roswell, GA 30076 (US). WELCH, Howard, Martin; 328 West Lane, Woodstock, GA 30188 (US). (74) Agents: LEACH, Nicholas, N. et al.; Kimberly-Clark Corporation, 401 North Lake Street, Neenah, WI 54956 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments</i> (88) Date of publication of the international search report: 27 March 1997 (27.03.97)	

(54) Title: NONWOVEN AND FILM CORRUGATED LAMINATES



(57) Abstract

The present invention is directed to corrugated laminates with density differentials created in at least one of the layers of the laminate. The laminates (10) include a first layer (12) bonded to a second layer (14) to form a composite which has a plurality of corrugations forming a series of peaks separated by a series of valleys. At least the second layer is formed from a compressible material such as a fibrous nonwoven web which has formed therein areas of different density due to the formation process used to form the laminate. In one process the first and second layers are bonded to one another along a series of generally parallel bond lines (16) while at least one of the materials is in a tensioned state. Once bonding is completed, the tension is released and the laminate forms a series of corrugations. In the valley areas (18) immediately adjacent the bond lines the laminate and in particular the second layer has an increased density due to the bonding process. In the peak areas (20), which are between the valley areas, the laminate and in particular the second layer has a lower density. As a result, fluids entering the laminate through the first layer tend to be drawn toward the more dense areas adjacent the bond lines. This couples with the reduced surface contact area of the first layer due to the corrugations, tend to make the material particularly well-suited for use as a body side liner for personal care absorbent articles.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 96/10667

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B31F1/26 A61F13/15 B29C53/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B31F A61F B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 91 11161 A (SMITH & NEPHEW) 8 August 1991 see page 8, last paragraph - page 9, last paragraph see page 14, last paragraph see page 20, paragraph 3 see page 23 - page 24 see page 28, paragraph 2; figures 1,2 ---	1-3,5,7, 8,13
X	US 4 079 739 A (WHITEHEAD HOWARD A) 21 March 1978 see column 4; figures 3,4 ---	1-4,7,8
X	EP 0 358 031 A (KAO CORP) 14 March 1990 see page 3, line 1 - page 4, line 19 see page 6, line 39 - line 52; figures 4,5 --- -/--	1,2,4,13

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

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- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

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- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

5 February 1997

Date of mailing of the international search report

25.02.97

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 96/10667

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 403 681 A (HOEY RAYMOND M ET AL) 1 October 1968 see column 2, line 63 - column 4, line 15; figure 3 ---	1-3,13
A	WO 90 05514 A (MOELNLYCKE AB) 31 May 1990 see the whole document ---	1,7
A	US 3 053 309 A (WILSON, SAUNDERS) 11 September 1962 see the whole document ---	15
A	EP 0 499 942 A (KIMBERLY CLARK CO) 26 August 1992 see the whole document ---	15
A	US 4 584 052 A (BAUM THEODORE M) 22 April 1986 see the whole document -----	15

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 96/10667

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

- 1.- claims 1-14: describing a laminate, a personal care absorbent article comprising said laminate and processes for the obtention of said laminate.
- 2.- claim 15 : describing an apparatus for forming a corrugated material.

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 96/10667

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 96/10667

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